UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,569	02/18/2005	Svante Wold	551-001-02	7282

4955   7590   04/01/2008
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ART UNIT	PAPER NUMBER
2112	

MAIL DATE	DELIVERY MODE
04/01/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 December 2004</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-17</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-17</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>27 December 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>12/27/2004</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

*   Pursuant to 35 USC 131, **Claims 1-17** are presented for examination.

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

.1   **Claims 1-11, 13-17** are rejected under 35 U.S.C. 101 as claiming a mathematical algorithm and as being devoid of a useful result.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the **second** paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

.1   **Claims 1-11, 13-15** are rejected under the second paragraph of 35 U.S.C. 112 for it is unclear to the Examiner what is being claimed and what the claim limitations are.

For example, Claims 1, 13 and intervening claims recite method/apparatus of monitoring and fault detection… where no monitoring or fault detection takes place;

For example, **in Claim 1**, it is unclear to the Examiner whether it is   *'method for monitoring of and fault detection in an industrial process*,' that drives '*comprising at least a first sub-process and at least one second sub-process*' or whether it is   '*industrial process*' that drives ''*comprising at least a first sub-process and at least one second sub-process.*''

In **Claim 1**, it is also unclear to the Examiner whether it is   'method for monitoring of and fault detection in an industrial process,' that drives 'comprising at least a first sub-process

and at least one second sub-process' or whether it is 'industrial process' that drives "comprising at least a first sub-process and at least one second sub-process"

For example, **Claim 13** recites '*A first apparatus for monitoring of and fault detection in an industrial process employing multivariate data methods:*' it is also unclear to the Examiner what employs '*multivariate data methods.*'

For example, there is a lack of antecedent basis in line 2 for 'the step(s)' in **Claims 2, 3, 5**, '*arranging*' in **Claims 6, 7.**

Applicants shall review all claims and amend same as necessary for clarity and provision of proper antecedent basis.

Specification

2.2   The disclosure is objected to as non-compliant with 37 CFR 1.75. because the description of 'computer program product' of **Claims 16-17** seems missing. Since **Claims 16-17** are original claims, Applicants shall be allowed to incorporate language of same original **Claims16-17** into the disclosure while at the same time avoiding introduction of new matter into same disclosure. Specification to be amended accordingly. Appropriate correction is required.

Claim Rejections - 35 USC ' 102

3.   **Claims 1-17** are rejected under '35 U.S.C. 102 (b) as being anticipated by **EPN 0537041** to **Klener et al.** –1st IDS of record-

     As per Claims 1-17, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent apparatus/approach/method for monitoring of and fault detection in an industrial process employing multivariate data methods/stages wherein industrial process mathematical modeling comprises plural sub-processes -e.g., col. 2 line 40 et seq.-arranged in a process chain and wherein said industrial process mathematical modeling comprises multivariate sub-model

computations to transform a product from a first stage to a final stage via plural series of stages-e.g., col. 2 line 14 et seq.-, data collection and transfer to effect industrial process monitoring and industrial process fault detection.

As per Claim 1, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5, equivalent method for monitoring of and fault detection in an industrial process, comprising at least a first sub-process and at least one second sub-process arranged in a process chain, comprising, for the at least one second sub-process the steps of collecting data and calculating a multivariate sub-model based on the collected data, said method being characterized by the steps: receiving in the first sub-process from the at least second sub-process information related to the multivariate sub-model calculated for the at least second sub-process, collecting data related to the first sub-process, and calculating a multivariate sub-model for the first sub-process based on collected data   and   received   information.

As per Claim 2, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized by the step of transmitting information or data related to the multivariate sub-model -e.g., col. 2 line 40 et seq.-calculated for the first sub-process to a third-e.g., col. 2 line 40 – col. 4 line 23 et seq.- sub-process.

As per Claim 3, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized by the step of performing information -e.g., col. 2 line 40 et seq.-or data feedback from the first sub-process to the at least one second sub-process.

As per Claim 4, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized in that the data collected for each sub-process-e.g.,   col.   3   line   14   et   seq.-   comprises   process   data.

As per Claim 5, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq.,

equivalent method according to claim 1, characterized in that the step of transferring information received comprises sequential transferring of quality parameters by means of multivariate sub-model score values (t1, t2, . . . , tn) between the sub-processes in the process chain.

As per Claim 6, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized in that arranging the collected data for the first sub-process in one matrix-e.g., col. 2 line 40 et seq.- and calculating the sub-model for the first sub-process using a principal component analysis like method.

As per Claim 7, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized in that arranging the collected data for the first sub-process-e.g., col. 4 line 6 et seq.- is in a first (X) and a second (Y) matrix and calculating the sub-model for the first sub-process using a PLS like method.

As per Claim 8, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 7, characterized by first matrix (X) -e.g., col. 4 line 6 et seq.-comprises process data and the second matrix (Y) comprises quality data.

As per Claim 9, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized by defining at least one plot, such as score plots, residual plots, residual standard deviation (DmodX) plots, contribution plots, or scaled raw data plots for the interpreting the models and occurring process faults.

As per Claim 10, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 9, characterized in that outlier detection is provided by analysis of said at least one plot.

As per Claim 11, Klener et al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized by using a number of multivariate sub-model observations comprising a prediction set to simulate the process chain.

As per Claim 12**, Klener et** al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent method according to claim 1, characterized by using a number of multivariate sub-model observations comprising a prediction set to perform on-line monitoring in the process chain.

As per Claim 13**, Klener et** al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent first apparatus for monitoring of and fault detection in an industrial process employing multivariate data methods, said first apparatus comprising calculating means for calculating a first multivariate sub-model for a first sub-process, said first apparatus being characterized in that it comprises means for receiving from at least a second apparatus information or data related to at a least second multivariate sub-model calculated for at least a second sub-process in the industrial process and that said calculating means is arranged to calculate the first multivariate sub-model based on the information or data received from said apparatus   and   said   second   sub-process.

As per Claim 14**, Klener et** al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent first apparatus according claim 13, characterized in that it comprises means for transmitting   information   or   data   to   a   third   apparatus.

As per Claim 15**, Klener et** al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent apparatus according to claim 13, characterized by means for performing information or   data   feedback-e.g.,   col.   4   line   6   et   seq.-   to   the   second   apparatus.

As per Claim 16**, Klener et** al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq., equivalent computer program product comprising computer readable code means -e.g., col. 2 line 47 et seq.-which, when run on a computer system, makes the computer system perform the following steps: receiving information or data from a first sub-process receiving information or data related to a second multivariate sub-model calculated at a second sub-process calculating a

first multivariate sub-model based on the data received from said second multivariate sub-model

and   said   first   sub-process.

As per Claim 17**, Klener et** al. discloses, e.g., in Fig. 1, Abstract and col. 2 line 5 et seq.,

equivalent computer program product -e.g., col. 2 line 47 et seq.-according to claim 16

comprising computer read-able code means which, when run on a computer system, makes the

computer system perform the following additional step: transmitting relevant information or data

to a third sub-process.

CONCLUSION

*   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Guy J. Lamarre, P.E., whose telephone number is (571) 272-

3826. The examiner can normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jacques Louis-Jacques, can be reached at (571) 272-6962.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Group receptionist whose telephone number is (571) 272-3609.

Information regarding the status of an application may also be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Guy J Lamarre/

Primary Examiner, Art Unit 2112